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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/285,773	04/05/99	MERCALDI G	M4065.165/P1

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EXAMINER	
UMEZ ERONINI,L	
ART UNIT	**PAPER NUMBER**
1765	

DATE MAILED: 06/07/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/285,773	Applicant(s) Mercaldi et al.
	Examiner Lynette T. Umez-Eronini	Group Art Unit 1765

☐ Responsive to communication(s) filed on _____ .

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *1-81* is/are pending in the application.

Of the above, claim(s) *42-81* is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *1-41* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☒ Claims *42-81* are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☒ The drawing(s) filed on *Apr 5, 1999* is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____ .

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____ .

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). *4*

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4, 6, 9, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Mitsubishi Electric Corp. (JP 0048816).

Mitsubishi Electric Corp. teaches an etch composition consisting of an alcohol and at least two inorganic acids (abstract). No patentable weight is given to the phrase, "for selectively etching a doped substance."because the functional language shows intended use.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 5, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mitsubishi Electric Corp. (JP 0048816) as applied to claim 1.

Mitsubishi Electric Corp. does not expressly teach the composition, wherein said alcohol is propylene glycol and said composition is non aqueous.

It is the Examiner's view that it would have been obvious to one having ordinary skill in the art at the time of the claimed invention to modify Mitsubishi Electric Corp. by replacing ethylene glycol with propylene glycol because both solvents are seen as equivalent because they are homologous and non aqueous polyhydric alcohols, and substituting one for would produce the best result.

5. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mitsubishi Electric Corp. (JP 0048816) as applied to claim 1.

Mitsubishi Electric Corp. does not expressly teach the alcohol is selected from the group consisting of ethanol, propanol, isopropanol, isobutanal, and n-butanol.

It is the Examiner's view that it would have been obvious to one having ordinary skill in the art at the time of the claimed invention to modify Mitsubishi Electric Corp. by replacing ethylene glycol with a conventional alcohol selected from the group consisting of ethanol, propanol, isopropanol, isobutanol, and n-butanol because they are seen as equivalent, they are non aqueous solvents and substituting one for the other would produce the claimed invention.

6. Claims 13-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mitsubishi Electric Corp. (JP 0048816) as applied to claim 1.

Mitsubishi Electric Corp. does not expressly teach the ratio of alcohol to acid.

It is well known in the art that the etch rate of the material to be remove is dependent upon process parameters such as the etchant flow rate, pressure, temperature and concentration. Varying one or more of the process parameters result in variations in the etch rate of the material to be removed.

It would have been obvious to one having ordinary skill in the art at the time of the claimed invention to modify Mitsubishi Electric Corp. by adjusting the concentration of the etchant composition by optimizing the same by conducting routine experimentation to minimize the production of a defective semiconductor structure due to the presence of unwanted etched residues.

7. Claims 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mitsubishi Electric Corp. (JP 0048816) as applied to claim 1.

Mitsubishi Electric Corp. does not expressly teach the substance is a doped material of amorphous silicon, pseudopolycrystalline silicon, germanium, gallium arsenide.

It is the Examiner's view that there is no difference in etching the doped or undoped form of a substrate wherein using the same etch composition under the same experimental conditions. The concentration of dopant in a substrate is small when

compared to the concentration of the etchant, such that the effects of etch rate of a doped substrate and undoped substrate of adding an etchant to the doped substrate is negligible.

It would have been obvious to one having ordinary skill in the art at the time of the claimed invention to modify Mitsubishi Electric Corp. by substituting the substance with either a doped silicon, doped germanium or gallium arsenide layer because they are used as substrate materials and substituting of one for the other are seen as equivalent to obtain the best result.

Claim Rejections - 35 USC § 102

8. Claims 22-24, 27, 30 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Mitsubishi Electric Corp. (JP 0048816).

Mitsubishi Electric Corp. teaches a composition consisting of an alcohol and at least two inorganic acids (abstract), wherein the alcohol is ethylene glycol. It is known in the art that alcohols are non aqueous. Hence a composition consisting of ethylene glycol reads on a non-aqueous composition of an alcohol as claimed in the present invention. No patentable weight is given to the phrase, "for selectively etching a doped substance."because the functional language shows intended use.

Claim Rejections - 35 USC § 103

9. Claims 26 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mitsubishi Electric Corp. (JP 0048816) as applied to claim 22.

Mitsubishi Electric Corp. does not expressly teach the composition, wherein the polyhydric alcohol is propylene glycol.

It is the Examiner's view that it would have been obvious to one having ordinary skill in the art at the time of the claimed invention to modify Mitsubishi Electric Corp. by replacing ethylene glycol with propylene glycol because both solvents are seen as equivalent because they are homologous and non aqueous polyhydric alcohols, and substituting one for would produce the best result.

10. Claims 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mitsubishi Electric Corp. (JP 0048816) as applied to claim 22.

Mitsubishi Electric Corp. does not expressly teach the alcohol is selected from the group consisting of ethanol, propanol, isopropanol, isobutanal, and n-butanol.

It is the Examiner's view that it would have been obvious to one having ordinary skill in the art at the time of the claimed invention to modify Mitsubishi Electric Corp. by replacing ethylene glycol with a conventional alcohol selected from the group consisting of ethanol, propanol, isopropanol, isobutanol, and n-butanol because they are seen as equivalent, they are non aqueous solvents and substituting one for the other would produce the best result.

11. Claims 33-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mitsubishi Electric Corp. (JP 0048816) as applied to claim 1.

Mitsubishi Electric Corp. does not expressly teach the ratio of alcohol to acid.

It is well known in the art that the etch rate of the material to be remove is dependent upon process parameters such as the etchant flow rate, pressure, temperature and concentration. Varying one or more of the process parameters result in variations in the etch rate of the material to be removed.

It would have been obvious to one having ordinary skill in the art at the time of the claimed invention to modify Mitsubishi Electric Corp. by adjusting the concentration of the etchant composition by optimizing the same by conducting routine experimentation to minimize the production of a defective semiconductor structure due to the presence of unwanted etched residues.

12. Claims 39-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mitsubishi Electric Corp. (JP 0048816).

Mitsubishi Electric Corp. teaches a composition consisting of an alcohol, ethylene glycol in addition to HF and HNO3 (abstract). No patentable weight is given to the phrase, "for selectively etching doped polysilicon from a silicon substrate."because the functional language shows intended use

Mitsubishi Electric Corp. do not expressly teach the alcohol is propylene glycol and the ratio of the etching composition.

It is the Examiner's view that it would have been obvious to one having ordinary skill in the art at the time of the claimed invention to modify Mitsubishi Electric Corp. by replacing ethylene glycol with propylene glycol because both solvents are seen as equivalent because they are homologous and non aqueous polyhydric alcohols, and substituting one for would produce the best result.

It is well known in the art that the etch rate of the material to be remove is dependent upon process parameters such as the etchant flow rate, pressure, temperature and concentration. Varying one or more of the process parameters result in variations in the etch rate of the material to be removed.

It would have been obvious to one having ordinary skill in the art at the time of the claimed invention to modify Mitsubishi Electric Corp. by adjusting the concentration of the etchant composition by optimizing the same by conducting routine experimentation to minimize the production of a defective semiconductor structure due to the presence of unwanted etched residues.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynette T. Umez-Eronini whose telephone number is (703) 306-9074.

ltue

June 3, 2000

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